

WHAT IS CLAIMED IS:

1. An electrical connector assembly comprising:

a connector position assurance device (CPA) including a retention assembly locking element and a CPA retention element;

first and second connector housings, one of said first and second connector housings having a body section with a mating interface on one end thereof and the other of said first and second connector housings having an opening to receive said mating interface;

a retention assembly mounted to said first connector housing for securing said first and second connector housings when said housings are fully mated, said retention assembly including a first housing retention feature, a CPA retention feature, and a locking contact surface, said retention assembly being movable between locked and unlocked positions;

a second housing retention feature mounted to said second connector housing, said second housing retention feature cooperating with said first housing retention feature to secure said first and second connector housings when said housings are fully mated; and

a CPA mounting assembly mounted to said first connector housing, said CPA being slidably mounted to said CPA mounting assembly and movable between first and second positions, said CPA permitting biasing of said retention assembly and engagement and disengagement of said first and second connector housings when in said first position, said retention assembly locking element cooperating with said locking contact surface to prevent said retention assembly from moving to said unlocked position when said CPA is in said second position, whereby said CPA

prevents engagement and disengagement of said first and second connector housings when in said second position, said CPA retention element cooperating with said CPA retention feature to maintain said CPA in said second position.

2. The electrical connector assembly of claim 1 wherein said CPA includes a first CPA beam and at least one second CPA beam, and said retention assembly includes arms and a cross-member joining said arms, said first CPA beam including said CPA retention element, said at least one second CPA beam including said retention assembly locking element, said arms including said locking contact surface, and said cross-member including said CPA retention feature.

3. The electrical connector assembly of claim 1 wherein said retention assembly locking element includes a raised surface, said retention assembly locking element extending from said CPA to a raised surface, and said retention assembly includes first and second surfaces, said first surface including said locking contact surface, said first surface being located proximal to said raised surface when said CPA is in said second position and contacting said raised surface when said retention assembly is biased toward said unlocked position when said CPA is in said second position, said second surface being located proximal to said raised surface when said CPA is in said first position and not contacting said raised surface when said retention assembly is in said unlocked position and said CPA is in said first position.

4. The electrical connector assembly of claim 1 wherein said retention assembly includes a retention member with first and second retention member surfaces, said

first retention member surface including said first housing retention feature, said second retention member surface including said CPA retention feature.

5. The electrical connector assembly of claim 1 wherein said retention assembly includes a blocking surface which contacts said CPA and prevents said CPA from being moved from said first position to said second position when said CPA is unbiased, and said second housing retention feature includes a CPA contacting surface that contacts and biases a portion of said CPA such that said CPA may be advanced from said first position to said second position when said first and second connector housings are mated and said CPA is in said first position.

6. The electrical connector assembly of claim 1 wherein said CPA includes sides and said CPA mounting assembly is a slot that slidably accepts said CPA sides.

7. The electrical connector assembly of claim 6 wherein said sides include side retention features and said slot includes slot retention features, said side retention features and said slot retention features cooperating to maintain said CPA in said slot.

8. The electrical connector assembly of claim 1 wherein said CPA includes a CPA finger rest and said retention assembly includes a retention assembly finger rest, said CPA finger rest at least partially surrounding said retention assembly finger rest when said CPA is in said second position.

9. An electrical connector assembly comprising:

a connector position assurance device (CPA) including a latch locking element and a CPA retention element;

a plug housing having a body section with a mating interface on one end thereof;

a header housing having an opening to receive said mating interface;

a latch assembly mounted to said plug housing for maintaining contact between said plug and header housings when mated, said latch assembly including a retention feature, a CPA retention feature, and a locking contact surface, said latch assembly being movable between latched and unlatched positions;

a latch retention assembly mounted to said header housing and including a latch retention surface, said latch retention surface cooperating with said retention feature to maintain contact between said plug and header housings when said housings are mated; and

a CPA mounting assembly mounted to said plug housing, said CPA being slidably mounted to said CPA mounting assembly and movable to unmated and mated positions, said CPA permitting movement of said latch assembly to said unlatched position and thereby permitting engagement and disengagement of said plug and header housings when in said unmated position, said latch locking element cooperating with said locking contact surface to prevent said latch assembly from moving to said unlatched position when said CPA is in said mated position, whereby said CPA prevents engagement and disengagement of said plug and header housings when in said mated position, said CPA retention element cooperating with said CPA retention feature to maintain said CPA in said mated position.

10. The electrical connector assembly of claim 9 wherein said CPA includes a retaining CPA beam and at least one locking CPA beam, and said latch assembly includes latch arms and a cross-member, said latch arms extending from a latch base and joined by said cross-member proximal to their free ends, said CPA retention element extending from said retaining CPA beam, said latch locking element extending from said at least one locking CPA beam, said latch arms including said locking contact surface, and said cross-member including said CPA retention feature.

11. The electrical connector assembly of claim 9 wherein said latch locking element includes a raised surface, said latch locking element extending from said CPA to said raised surface, and said latch assembly includes an interfering surface and a clearance surface, said interfering surface being substantially parallel to said raised surface when said latch assembly is in said latched position and contacting said raised surface when said latch assembly is biased toward said unlatched position when said CPA is in said mated position, said clearance surface being sloped relative to said raised surface when said latch assembly is in said latched position and not contacting said raised surface when said latch assembly is in said unlatched position and said CPA is in said unmated position.

12. The electrical connector assembly of claim 9 wherein said latch assembly includes a retention member with first and second retention member surfaces, said first retention member surface including said retention feature, said second retention member surface including said CPA retention feature.

13. The electrical connector assembly of claim 9 wherein said latch assembly includes a blocking surface which contacts said CPA and prevents said CPA from being moved from said unmated position to said mated position when said CPA is unbiased, and said header housing includes a CPA contacting surface that contacts and biases a portion of said CPA such that said CPA may be advanced from said unmated position to said mated position when said plug and header housings are mated and said CPA is in said unmated position.

14. The electrical connector assembly of claim 9 wherein said CPA includes sides and said CPA mounting assembly is a slot that slidably accepts said CPA sides.

15. The electrical connector assembly of claim 9 wherein said CPA includes a CPA finger rest and said latch assembly includes a latch assembly finger rest, said CPA finger rest at least partially surrounding said latch assembly finger rest when said CPA is in said second position.

16. An electrical connector half assembly comprising:

- a connector position assurance device (CPA) including a retention assembly locking element and a CPA retention element;

- a connector housing adapted for mating with a mating connector housing;

- a retention assembly mounted to said connector housing for securing said connector housing to a mating connector housing when fully mated, said retention assembly including a housing retention feature, a CPA retention feature, and a locking

contact surface, said retention assembly being movable between locked and unlocked positions; and

a CPA mounting assembly mounted to said connector housing, said CPA being slidably mounted to said CPA mounting assembly and movable between first and second positions, said CPA permitting biasing of said retention assembly when in said first position, said retention assembly locking element cooperating with said locking contact surface to prevent said retention assembly from moving to said unlocked position when said CPA is in said second position, said CPA retention element cooperating with said CPA retention feature to maintain said CPA in said second position.

17. The electrical connector half assembly of claim 16 wherein said CPA includes a first CPA beam and at least one second CPA beam, and said retention assembly includes arms and a cross-member joining said arms, said first CPA beam including said CPA retention element, said at least one second CPA beam including said retention assembly locking element, said arms including said locking contact surface, and said cross-member including said CPA retention feature.

18. The electrical connector half assembly of claim 16 wherein said retention assembly locking element includes a raised surface, said retention assembly locking element extending from said CPA to a raised surface, and said retention assembly includes first and second surfaces, said first surface including said locking contact surface, said first surface being located proximal to said raised surface when said CPA is in said second position and contacting said raised surface when said retention

assembly is biased toward said unlocked position when said CPA is in said second position, said second surface being located proximal to said raised surface when said CPA is in said first position and not contacting said raised surface when said retention assembly is in said unlocked position and said CPA is in said first position.